

CLAIMS

1. A mechanism for transmitting torque between a shaft (12) and a hub (14) disposed around the shaft (12) while
5 holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in engagement with each other, wherein

said shaft tooth section (22) has a straight peak (22a) having a constant tooth thickness and a valley (22b) having
10 an outside diameter varying from an end of the shaft (12) toward a shaft shank (24) of the shaft (12);

said hub tooth section (28) has a straight peak (28a) having a constant tooth thickness and having an inside
15 diameter varying from an end thereof toward said shaft shank (24) and a valley (28b) having a constant inside diameter in the axial direction of the shaft (12); and

said valley (22b) of said shaft tooth section (22) has a first step region (30) raised toward said hub tooth
20 section (28), and said peak (28a) of said hub tooth section (28) has a second step region (32) retracted away from said shaft tooth section (22).

2. A mechanism according to claim 1, wherein a starting
25 point (P1) of said first step region (30) and a starting point (P2) of said second step region (32) are set in respective positions which are offset from each other by a predetermined distance (L4).

3. A mechanism according to claim 1, wherein said first
step region (30) of said shaft tooth section (22) has a tilt
angle (θ) set to a value ranging from 5 degrees to 45
degrees.

4. A mechanism according to claim 1, wherein said peak
(22a) of said shaft tooth section (22) has an outside
diameter which is constant in the axial direction of said
shaft (12).

5. A mechanism according to claim 1, wherein said peak
(22a) of said shaft tooth section (22) has an outside
diameter near and end thereof which gradually decreases
toward said shaft shank (24).

6. A mechanism for transmitting torque between a shaft
(12) and a hub (14) disposed around the shaft (12) while
holding a shaft tooth section (22) formed on the shaft (12)
and a hub tooth section (28) formed on the hub (14) in
engagement with each other, wherein

said shaft tooth section (22) has a straight peak (22a)
having a constant tooth thickness and a valley (22b) having
an outside diameter varying from an end of the shaft (12)
toward a shaft shank (24) of the shaft (12);

said hub tooth section (28) has a straight peak (28a)
having a constant tooth thickness and having an inside

diameter varying from an end thereof toward said shaft shank (24) and a valley (28b) having a constant inside diameter in the axial direction of the shaft (12); and

5 said valley (22b) of said shaft tooth section (22) has an arcuate region (130) having a predetermined radius of curvature and extending toward said hub tooth section (28), and said peak (28a) of said hub tooth section (28) has a step region (132) facing said arcuate region (130) and retracted away from said shaft tooth section (22).

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7. A mechanism according to claim 6, wherein a starting point (P1) of said arcuate region (130) joined to the valley (22b) of said shaft tooth section (22) and a starting point (P2) of said step region (132) joined to the peak (28a) of
15 said hub tooth section (28) are set in respective positions which are offset from each other by a predetermined distance (L2).

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8. A mechanism for transmitting torque between a shaft
20 (12) and a hub (14) disposed around the shaft (12) while holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in engagement with each other, wherein

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 said shaft tooth section (22) has a straight peak (22a)
25 having a constant tooth thickness and a valley (22b) having an outside diameter varying from an end of the shaft (12) toward a shaft shank (24) of the shaft (12);

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said hub tooth section (28) has a straight peak (28a) having a constant tooth thickness and having an inside diameter varying from an end thereof toward said shaft shank (24) and a valley (28b) having a constant inside diameter in the axial direction of the shaft (12); and

said valley (22b) of said shaft tooth section (22) has a tapered region (230) having a diameter progressively increasing toward said hub tooth section (28), and said peak (28a) of said hub tooth section (28) has a step region (232) facing said tapered region (230) and retracted away from said shaft tooth section (22).

9. A mechanism according to claim 8, wherein a starting point (P1) of said tapered region (230) and a starting point (P2) of said step region (232) are set in respective positions which are offset from each other by a predetermined distance (L2).

10. A mechanism according to claim 8, wherein said tapered region (230) of said shaft tooth section (22) has a rise angle (θ) set to a value ranging from 6 degrees to 65 degrees.

11. A mechanism for transmitting torque between a shaft (12) and a hub (14) disposed around the shaft (12) while holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in

engagement with each other, wherein

said shaft tooth section (22) has a straight peak (22a) having a constant tooth thickness and a valley (22b) having an outside diameter varying from an end of the shaft (12) toward a shaft shank (24) of the shaft (12), said valley (22b) having a step region (330) raised toward said hub tooth section (28) obliquely at a predetermined angle; and

said hub tooth section (28) has a straight peak (28a) having a constant tooth thickness and a valley (28b), said peak (28a) and said valley (28b) having constant inside diameters from the end toward said shaft shank (24) in the axial direction of the shaft (12).

12. A mechanism according to claim 11, wherein said step region (330) has a tilt angle (θ) set to a value ranging from 5 degrees to 45 degrees.

13. A mechanism for transmitting torque between a shaft (12) and a hub (14) disposed around the shaft (12) while holding a shaft tooth section (22) formed on the shaft (12) and a hub tooth section (28) formed on the hub (14) in engagement with each other, wherein

said shaft tooth section (22) has a straight peak (22a) having a constant tooth thickness and a valley (22b) having an outside diameter varying from an end of the shaft (12) toward a shaft shank (24) of the shaft (12);

said hub tooth section (28) has a straight peak (28a)

having a constant tooth thickness and having an inside diameter varying from an end thereof toward said shaft shank (24) and a valley (28b) having a constant inside diameter in the axial direction of the shaft (12); and

5 said valley (22b) of said shaft tooth section (22) has a tapered surface (332) inclined at a predetermined angle.

10 14. A mechanism according to claim 13, wherein said peak (28a) of said hub tooth section (28) has a second tapered surface (334) facing the first tapered surface (332) of said valley (22b) of said shaft tooth section (22).

15 15. A mechanism according to claim 13, wherein a starting point (P1) where said first tapered surface (332) starts to rise and a starting point (P4) where said second tapered surface (334) starts to rise are set in respective positions which are offset from each other by a predetermined distance in the axial direction of the shaft (12).

20 16. A mechanism according to claim 13, wherein said peak (28a) of said hub tooth section (28) has an arcuate surface (336) having a predetermined radius of curvature and retracted away from said shaft tooth section (22).

25 17. A mechanism according to claim 16, wherein a starting point (P1) where said tapered surface (332) starts

to rise and a starting point (P5) where said arcuate surface (336) starts to rise are set in respective positions which are offset from each other by a predetermined distance in the axial direction of the shaft (12).